

whose "fitness rating" was over 0.6), and eleven Class C rabbits (rating below 0.5). Each rabbit was given an intravenous injection with from six to eighty-three highly-virulent type one pneumococci per c.c. of calculated blood volume. Blood cultures, (pour plates), were made at the end of thirty minutes, one hour and three hours to determine the rate of disappearance of the pneumococcus from the circulation. All rabbits of Class A accomplished this sterilization of the blood stream within thirty to sixty minutes, even after intravenous doses as high as eighty-three microorganisms per c.c., while 92 per cent of the rabbits of this class showed no fever or other demonstrable symptoms. All recovered from the infection. Class C rabbits, in contrast, were not able to accomplish removal of pneumococci from the circulation, even when the intravenous dose was reduced to six microorganisms per c.c. All Class C rabbits died within three days of pneumococcal septicemia. Class B rabbits occupied an intermediate position, some of them showing a complete removal of pneumococci from the blood stream by the end of sixty minutes; 69 per cent of them recovered from the infection.

Doctor Locke's second series consisted of sixteen Class A, nineteen Class B, and sixteen Class C rabbits. Each animal of this series was injected intradermally with 800 to 2,000 highly-virulent type one pneumococci. Penetration of the pneumococci from the intradermal focus into the blood stream was estimated from pour plates made at the end of twenty-six hours. Some 69 per cent of his Class A rabbits yielded practically negative blood cultures at this time, and 44 per cent of Class A recovered from the infection, while 93 per cent of Class C rabbits showed a blood count of 2,000 or more pneumococci per c.c. at the end of twenty-six hours. All Class C animals died from the resulting generalized infection. Group B occupied an intermediate position, 21 per cent showing 2,000 or more circulating pneumococcus per cc. at the end of twenty-six hours, and 89 per cent of them dying from pneumococcus septicemia.

Doctor Locke then studied environmental and therapeutic factor-causing fluctuations in his "fitness rating," and natural resistance. Transfer to quarters, kept at 20° F. higher temperature than the routine animal rooms, was followed by a 30 per cent fall in fitness rating. Proportionate improvements in fitness were observed as a result of transfer to 20° F. cooler quarters. Morphine administered in doses sufficient to inhibit shivering depressed fitness rating. Smaller doses were without demonstrable effects. Marked depression in rating was observed following withdrawal of food, but no continuing impairment in rating till the resulting weight loss was increased to 2.5 per cent per day.

Occasional improvement in fitness rating was observed following subcutaneous injection with "antuitrin." Marked improvements followed intravenous injection with "cortin." Daily feeding with liver extract prepared for treatment of pernicious anemia (or an intravenous injection with this extract), led in all cases to improvement in fitness rating. Control intravenous injections with peptone, heparin, or normal horse serum gave negative results.

Therapeutic improvement in fitness rating, however, conferred ability to survive experimental pneumococcus infection only when treatment was continued for a sufficient length of time to lift the fitness rating above the "critical level," 0.6. Doctor Locke found that his "critical level" varied with the pneumococcus strain tested. Rabbits infected intradermally, with relatively nonvirulent "type V" pneumococci for example, successfully resisted septicemic invasion if their fitness level was above 0.3.

In order to determine probable clinical applications of his efficiency gradient, Doctor Locke measured the oxygen consumption per square meter of body surface of sixty-eight individuals during maximum effort with arms and legs on a machine resembling a stationary bicycle. Oxygen consumption varied from 410 to 1,500 c.c. per minute per square meter of body surface. Relative fitness was calculated by arbitrarily assigning a fitness rating of one (100 per cent), to the highest figure (1,500 c.c.). Thus, a person consuming 410 cc. per minute would have a calculated rating of 410/1500 or 0.27. The sixty-eight persons thus classified were asked to report the number of colds they had had during the observational period of seven months; eighteen persons with fitness rating above 0.6 reported one cold or less during this period, and nine persons with fitness ratings below 0.5 reported four colds or more during the same period of time.

P. O. Box 51.

W. H. MANWARING,
Stanford University.

IS BREAST FEEDING ALWAYS BEST?

In every discussion of infant feeding, we are invariably greeted with the trite statement: "Mother's milk is the best infant food." This has been preached so often that it has come to be regarded as gospel. Yet, like all gospel, it is subject to interpretation.

What is really meant is that a good grade of mother's milk is the ideal infant food. Unfortunately, however, not all mother's milk is good, by far.

In fact, the present-day upper-class mother in this country, while an excellent baby producer, is generally, a poor milk producer.

Pediatricians agree that successful breast feeding is rapidly becoming a rarity, especially in private practice. Just why healthy women cannot lactate defies explanation. Many who are most eager and best circumstanced fizzle after the first few weeks, despite the most sincere effort.

And, old adages to the contrary, this is not to the detriment of the babies, for today average artificially fed babies, under proper care, do equally as well as breast-fed, if not better. In fact, in cases where a desperate nerve-wracking effort is being made to augment a deficient supply, the baby is the chief sufferer. (Prematures are not referred to here; for them, all effort must be made to secure high-grade breast milk. But even in those cases, their own mothers seldom can be utilized as the source.)

The statement about mother's milk being best is a hand-me-down from a generation ago, when it was irrefutably true. At that time, nutritional requirements of infants were not definitely understood, and production of *safe* cow's milk was an unknown endeavor.

In those days all cow's milk was to be regarded as contaminated, and breast milk, even the poorest, was at least safe.

The chief difficulty in breast feeding is the extreme variability in quantity and quality from week to week, day to day, and even feeding to feeding. Physical and nervous factors influencing the mother rob her of consistency. Milk from "contented mothers" would undoubtedly be superior; but what mother today can remain placidly at work making milk while from early morning till late at night she is being bombarded by upsetting influences? She quarrels with her husband at breakfast; the mail brings worrisome bills; mother-in-law comes in and tells her she is making a mess of raising the baby; the baby cries for hours. Contentment? Another present-day rarity. So at best we can know only, in a general way, how much and what kind of milk a baby is getting from the breast, while a formula is an accurate certainty.

There is little use in laboratory testing of breast milk. The best laboratory is the baby. If the baby does well, the food is suitable, and vice versa.

The hardest job is to feed infants who are on part breast and part supplementary, into which class most fall at one time or another.

It is quite reasonable to modify the old statement to read: "The mother's own milk is to be given a fair trial first, on the assumption that if it is of good quality and quantity, it is best for the baby." But, if after a reasonable trial, trouble continues, it need not be felt that the baby's best interests are being violated by substituting a formula of known and consistent quality and quantity, compounded to meet accurately the individual needs of the particular baby in question.

3875 Wilshire Boulevard.

EDWIN F. PATTON,
Los Angeles.

DIAGNOSIS AND TREATMENT OF NON-PROSTATIC OBSTRUCTIONS OF THE LOWER URINARY TRACT

The differential diagnosis and treatment of urinary retention due to obstructions of the lower urinary tract, from causes other than prostatic hypertrophy, are of great interest. Congenital obstructions of the lower urinary tract in the male, and the numerous types of bladder-neck obstructions occurring in women, have not been sufficiently emphasized by urologists and are usually neglected by the general profession. Recent investigations on the neurogenic bladder are most enlightening, as they point out the necessity of a careful urological study and envisage the clinical indications of medical treatment—the administration of acetyl b-methylcholin, and that of surgical intervention, resection of the presacral nerves.

In considering congenital obstruction of the lower urinary tract in the male, it has been observed

that a greater number of these lesions are encountered on the autopsy table than are diagnosed during life. And, until greater coöperation is obtained on the part of the pediatrician and the internist, this condition will continue to exist. The "pot-bellied" child, possessing chronic pyuria and in whom the kidneys are enlarged, calls for a urological investigation. There is no doubt that congenital valves of the posterior urethra and its accompanying hypertrophied verumontanus cause back pressure, resulting in hydroureter and hydronephrosis. However, I share the opinion of others that in a certain number of cases the accompanying megalo ureter and hydronephrosis exist as part of the congenital anomaly, are present at birth, and sometimes require separate treatment. I feel that fibrosis of the vesical-neck occurs more frequently in children than is generally recognized. I recall a child in whom diagnosis of this condition was made at the age of seven. Treatment was refused and he returned ten years later suffering from repeated attacks of difficult urination, culminating in acute retention, and he was relieved by transurethral resection of the obstructing median bar. We observed an interesting case of acute urinary retention due to a stone in the prostatic urethra, and this patient was relieved by perineal section, preceded by cystotomy.

There are numerous pathological conditions causing obstruction of the bladder neck in the female. We are prone to underestimate the frequency of obstructive lesions in the female bladder neck. A number of these, consisting of cysts, polypi, tumors, and strictures, particularly when they are situated on the urethral side of the vesical neck, are best seen with the water-dilating type of cysto-urethroscope. It is well to employ this instrument as these lesions are sometimes overlooked with the open air urethroscope. I recall an interesting case of complete urinary retention in a woman due to an enormous hematocele, secondary to a necrosing carcinoma of the uterus. Bladder function was reestablished with drainage of the hematocele by a stab wound in the cul-de-sac. We have seen a number of cases of retention resulting from stricture formation of the deep urethra due to radiation therapy for malignant pelvic growths. Rational treatment of the various obstructive lesions is based on the character and extent of the lesion. In certain types of papillomatous growths of the vesical neck, which recur after repeated fulguration, resection of the tumor mass by means of cutting current through the open bladder is our treatment of choice, and has been followed by cure in a selected number of cases.

The differential diagnosis between the neurogenic bladder and other obstructive lesions of the bladder neck calls for a careful examination, including a neurological examination, as well as a complete urological study, comprising cystoscopy, cystometry, etc. The characteristic cystoscopic picture of the neurogenic bladder, as seen in *tabes dorsalis*, has long been recognized. Koll was among the first to describe these findings and in 1911 he called attention to the ureteral orifice rigidity (condition similar to the Argyl-Robertson